NEBRASKA ADULT MOSQUITO SURVEILLANCE REPORT 2019 UPDATE
Week #26 (Trapping Period 4)

Date: 07/01/2019. Please note that mosquito collection data covers dates 06/16/2019 to 06/29/2019 (CDC Weeks 25 and 26).

SUMMARY

Summary Table – Regional CDC Light Trap Data, 16 June through 29 June (CDC Weeks 25 and 26)

	Total Mosquito Trap Index (CDC Wks 25/26)			Culex Mosquito Trap Index (CDC Wks 25/26)		
Region	Current Trap Index*	5 Yr Avg. Trap Index	Activity**	Current Trap Index*	5 Yr Avg. Trap Index	Activity**
West***	99.52	31.34	**High**	7.65	13.75	**Low**
North Central***	98.58	88.33	**High**	16.98	6.86	**Moderate**
South Central***	194.74	19.02	**V. High**	86.14	6.05	**E. High**
East***	71.24	67.96	**Moderate**	18.81	6.29	**V. High**
Statewide	106.18	45.18	**High**	22.70	8.45	**High**

*Trap indexes are calculated by taking the number of mosquitoes and dividing it by the number of traps set per night (Trap Index = Mosquitoes collected/# of Traps/# of nights set). The indexes are then transformed to the Williams mean to better account for variations in mosquito collections.

Activity levels are described in relative terms based on historical data from at most the previous 5 years. Activity levels correspond to: **Low = 0 to 40th percentile, **Moderate = 41st to 60th percentile**, **High = 61st to 80th percentile**, **Very High = 81st to 97th percentile**, and **Extremely High = >97th percentile**.

***Regional breakdowns (see pg. 2 for map) are as follows: **West =** Panhandle Public Health Department (Box Butte, Dawes, and Garden Counties), Southwest NE Public Health Department (Chase and Red Willow Counties), Scotts Bluff County Health Department (Scotts Bluff County); **North Central =** Loup Basin Public Health Department (Garfield County), North Central District Health Department (Cherry and Holt Counties), West Central District Health Department (Lincoln Co.); **South Central =** Central District Health Department (Hall County), East Central District Health Department (Platte County), Four Corners Health Department (York and Seward Counties), South Heartland Health Department (Adams and Webster Counties), Two Rivers Public Health Department (Buffalo, Dawson, and Phelps Counties); **East =** Douglas County Health Department (Douglas County), Elkhorn-Logan Valley Public Health Department (Madison County), Lincoln-Lancaster County Health Department (Lancaster County), Northeast NE Public Health Department (Dixon and Wayne Counties), Public Health Solutions (Gage and Jefferson Counties), Sarpy-Cass Health Department (Sarpy and Cass Counties), Southeast District Health Department (Richardson County), Three Rivers Public Health Department (Dodge County).

State summary: Continued increases of mosquitoes were seen in the South Central and West Regions. Floodwater mosquitoes continue to be the most collected mosquitoes in the trap network. The common floodwater species, *Aedes vexans* was the most collected mosquito during this trap period making up nearly 53% of all collections. Most regions of the state are seeing high to very high overall mosquito activity for this time of year with only the East region seeing moderate activity. *Culex* mosquito activity has also increased with the primary WNV vector, *Culex tarsalis* being the second most collected mosquito in this trapping period making up 25.6% of collections. *Culex* were very high in the East and extremely high in the South Central regions of the state respectively for this time of year.

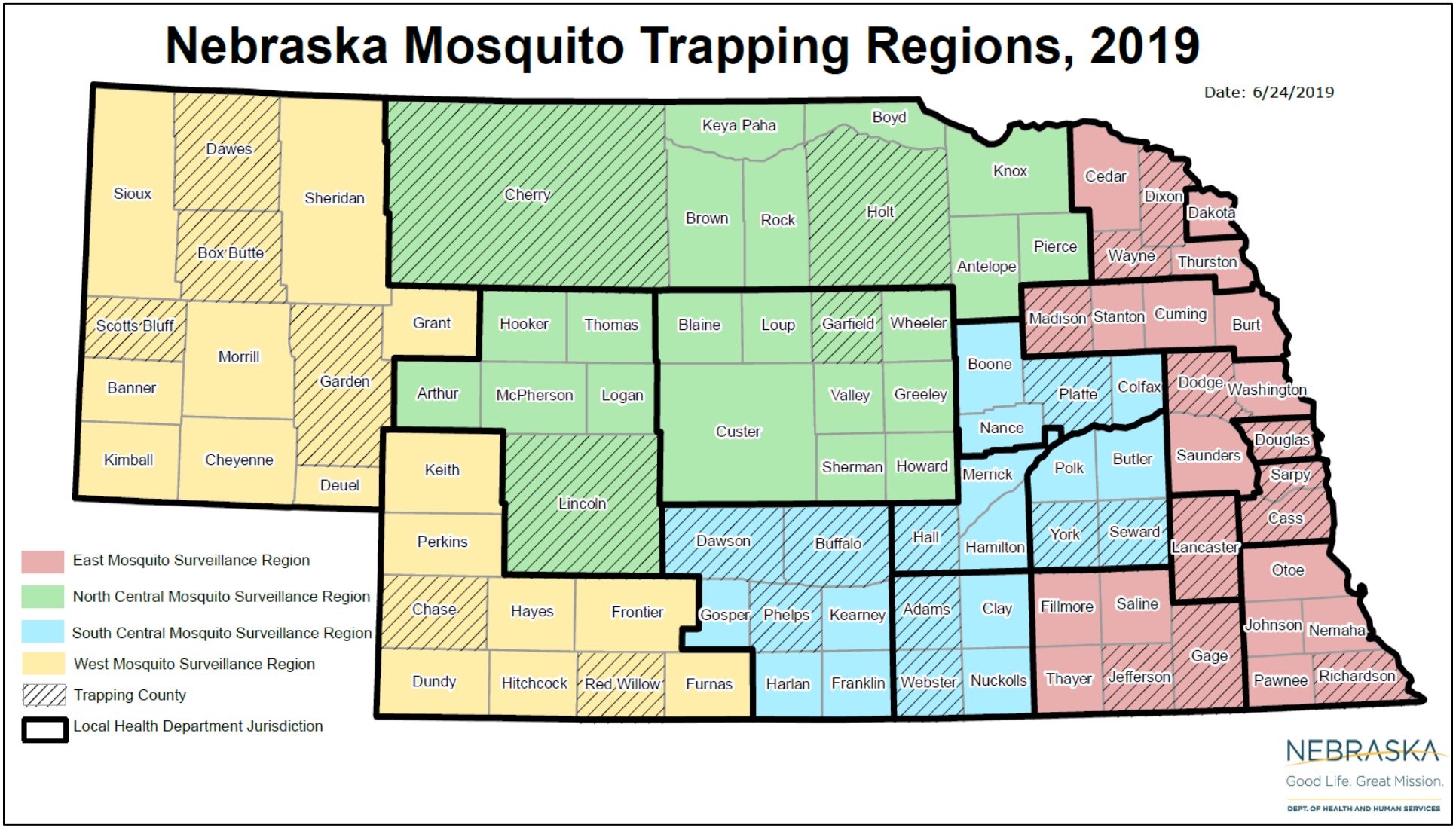


Figure 1. Nebraska Mosquito Light Trap Regions, 2019.

Region Graphs:

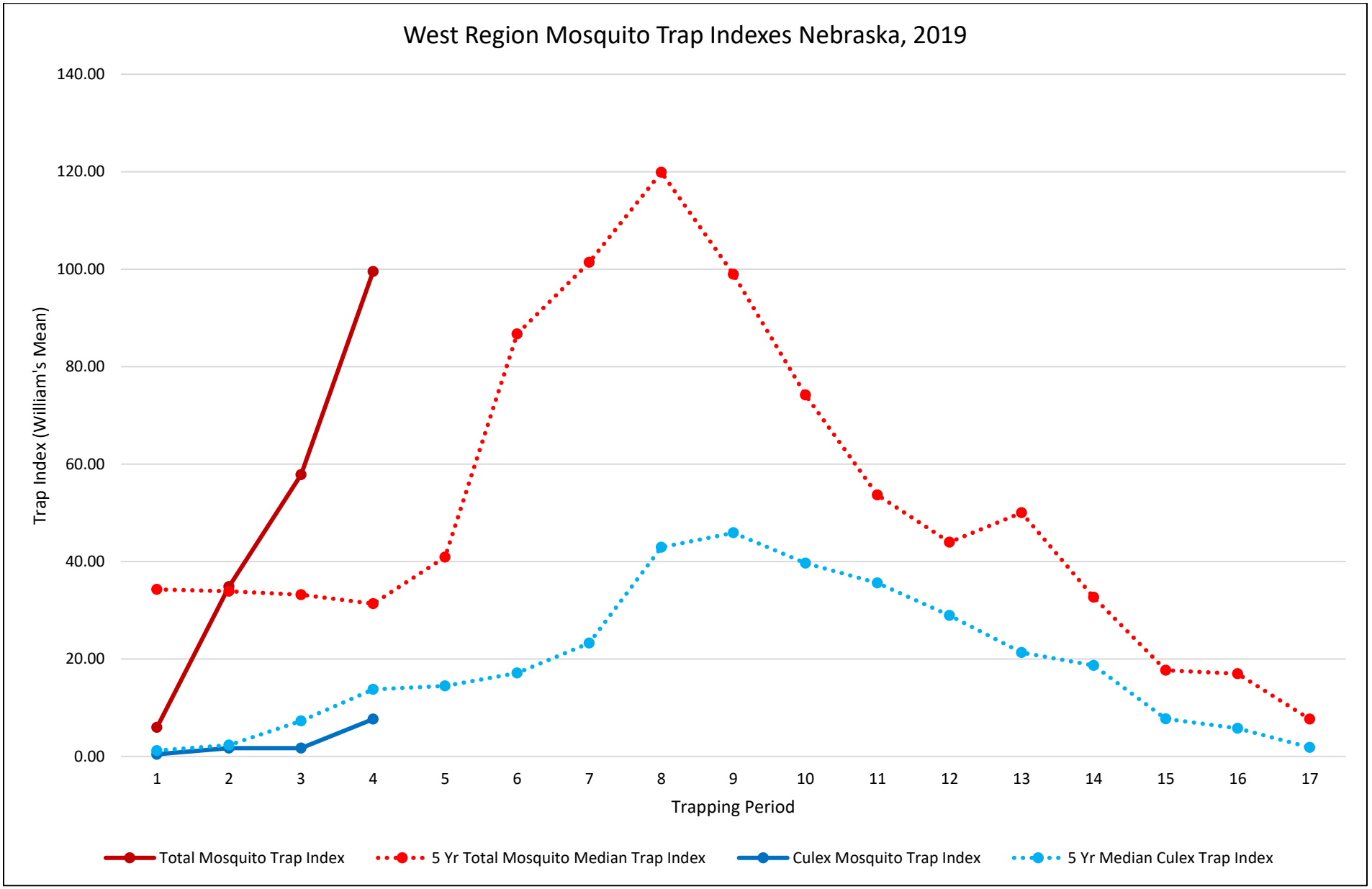


Figure 2. West Region Total Mosquito and *Culex* Mosquito Trap Indexes Nebraska, 2019.

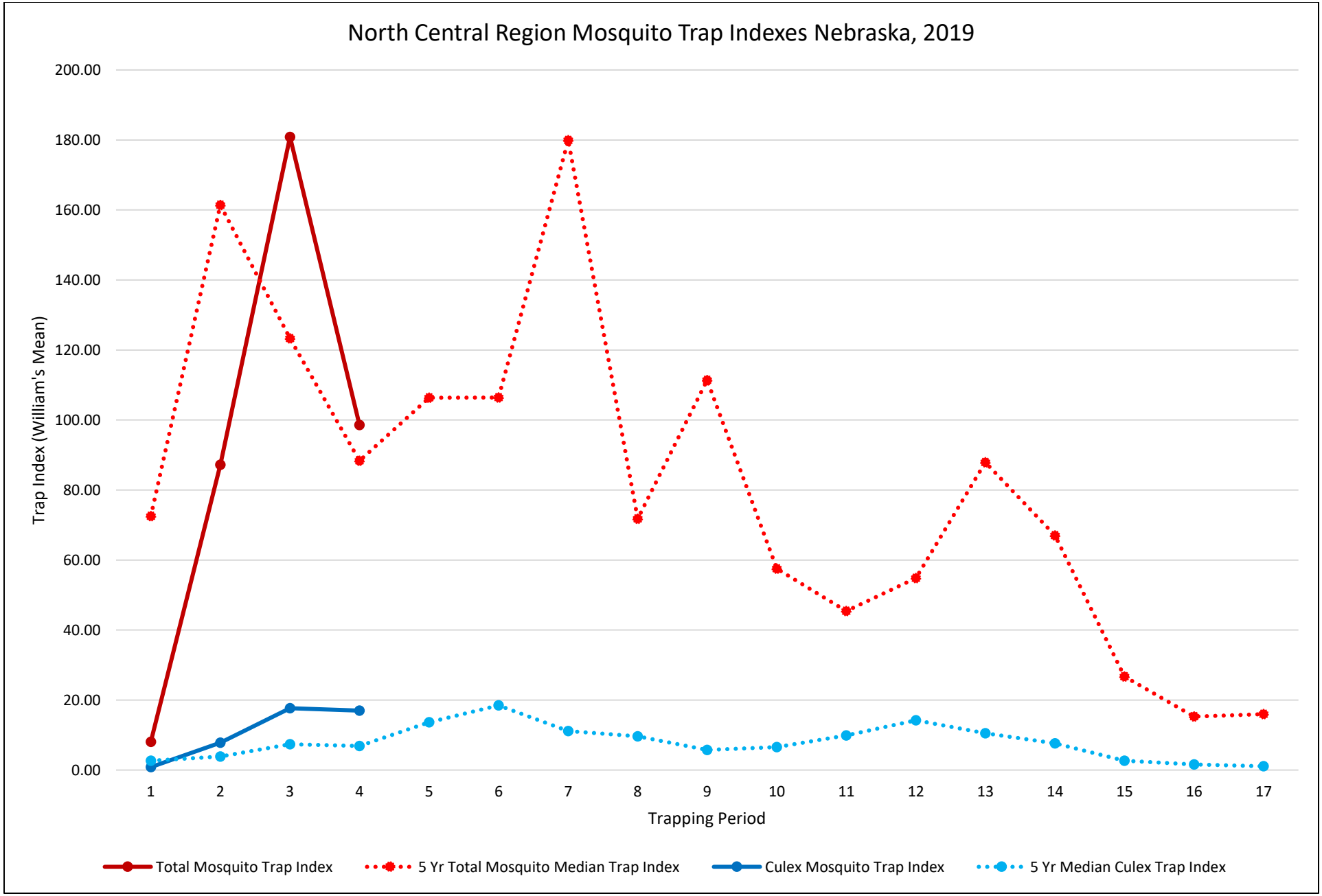


Figure 3. North Central Region Total Mosquito and *Culex* Mosquito Trap Indexes Nebraska, 2019.

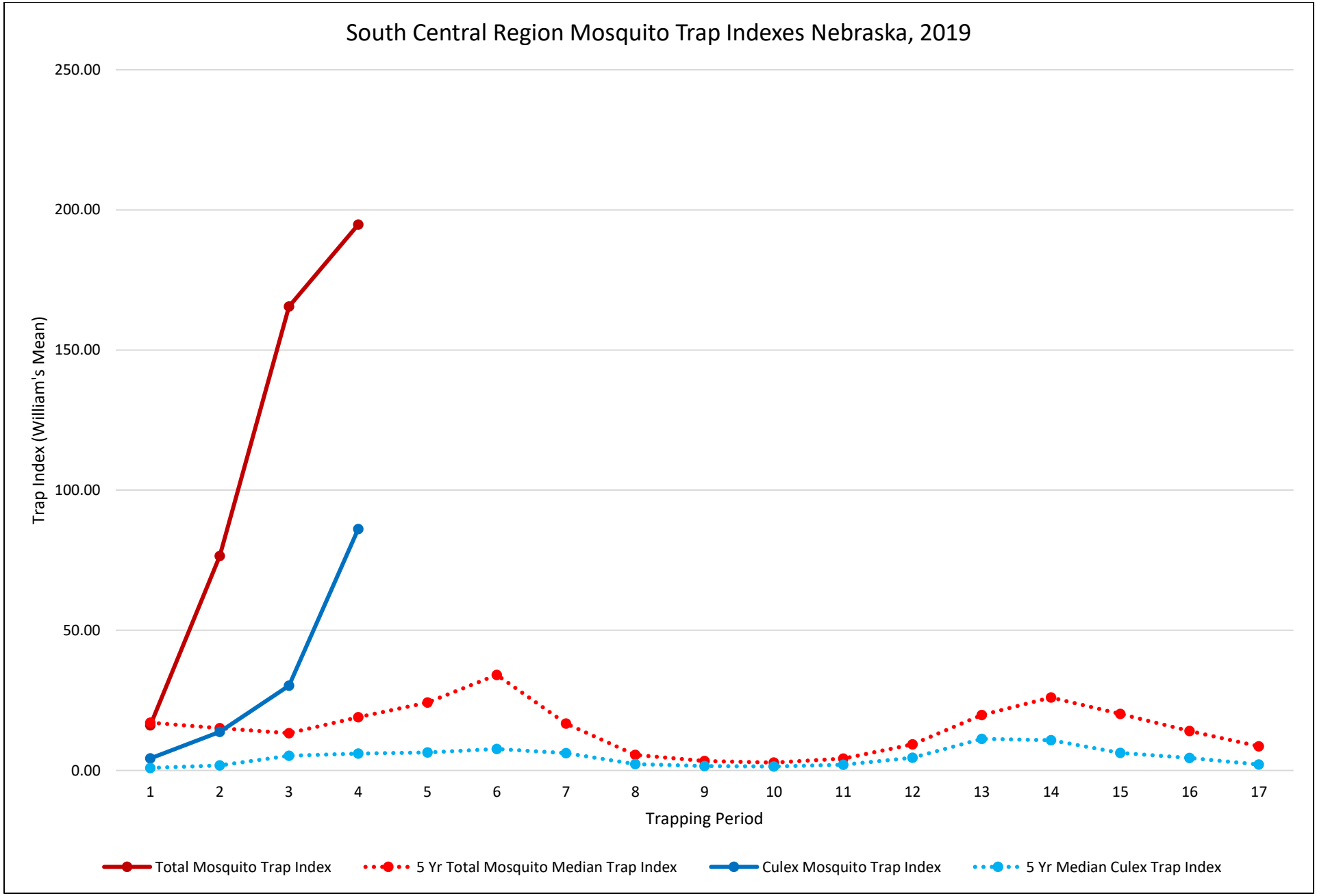


Figure 4. South Central Region Total Mosquito and *Culex* Mosquito Trap Indexes Nebraska, 2019.

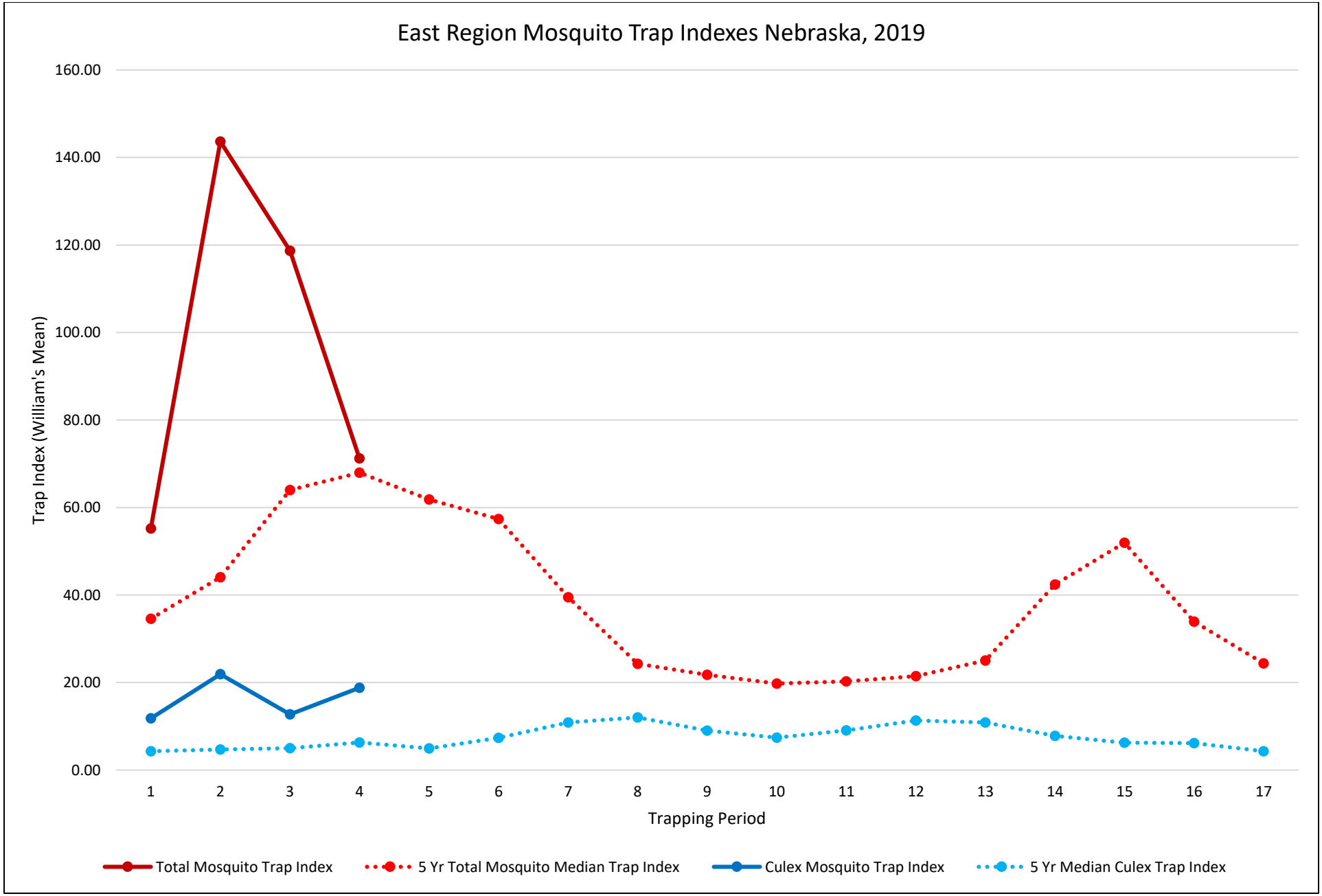


Figure 5. East Region Total Mosquito and *Culex* Mosquito Trap Indexes Nebraska, 2019.

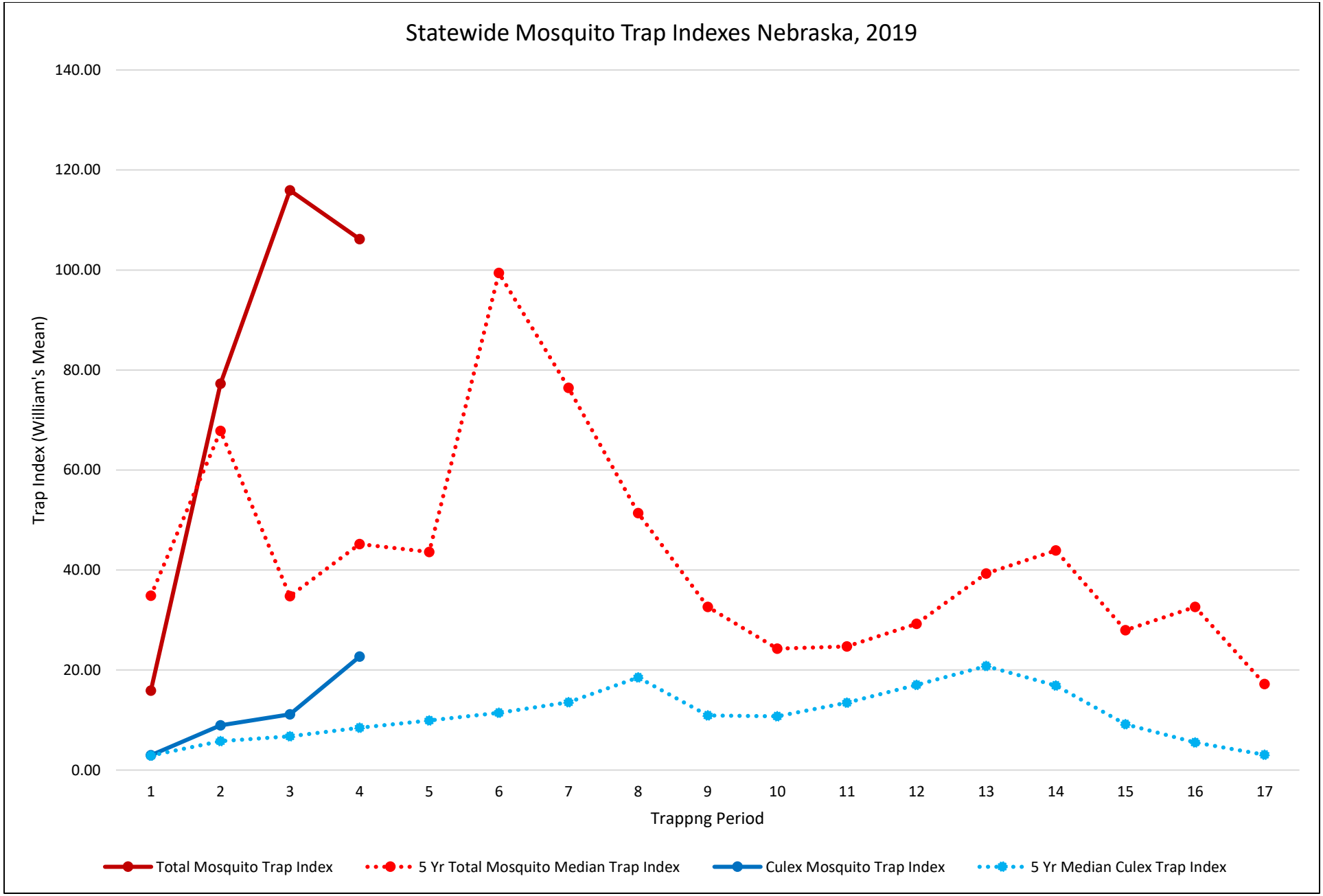


Figure 6. Statewide Total Mosquito and *Culex* Mosquito Trap Indexes Nebraska, 2019.

Top Mosquitoes per Region (cumulative counts):

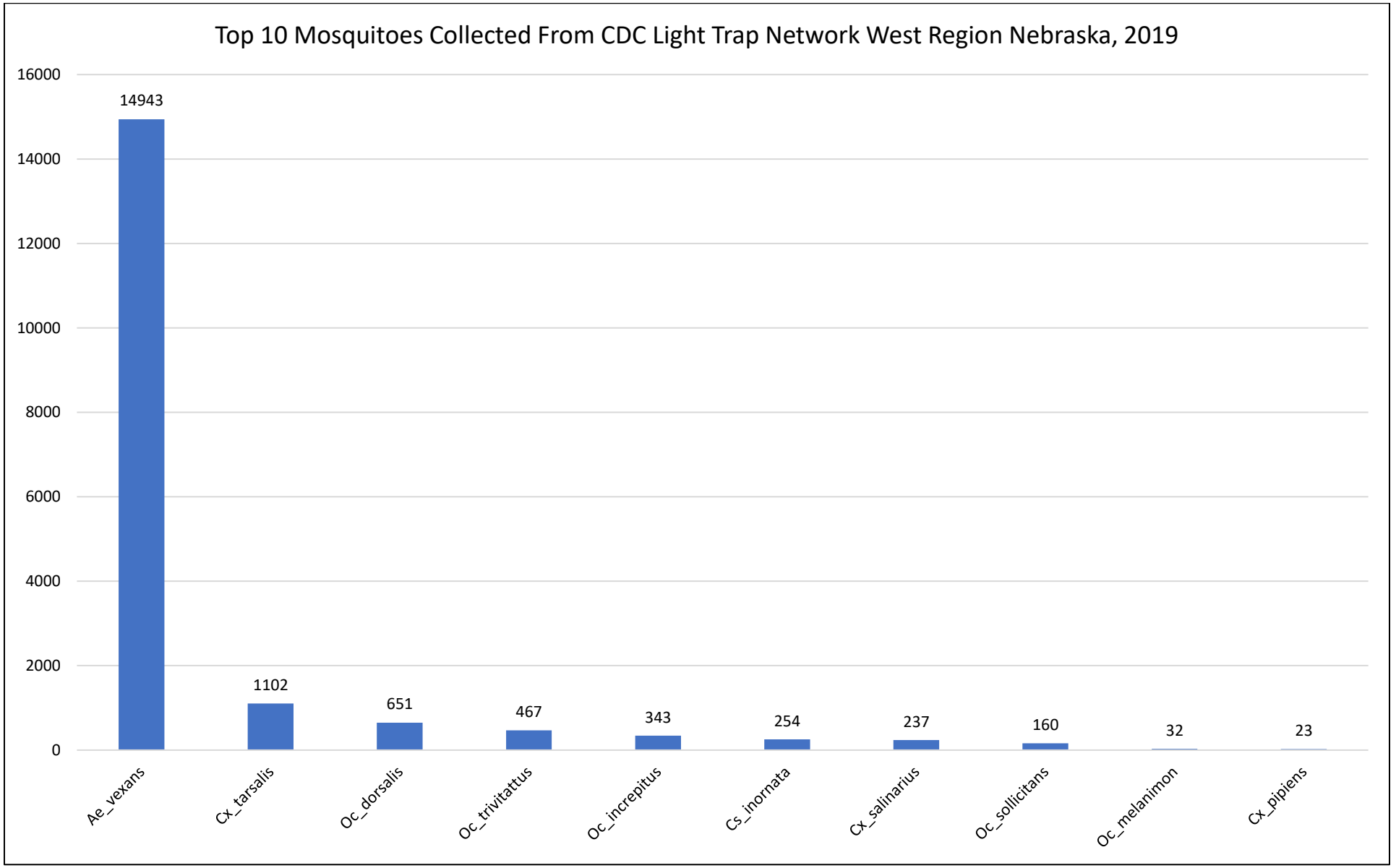


Figure 7. Top 10 mosquito species collected from CDC Light Trap Network West Region Nebraska, 2019. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culesita*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, Unid'd= Unidentified.

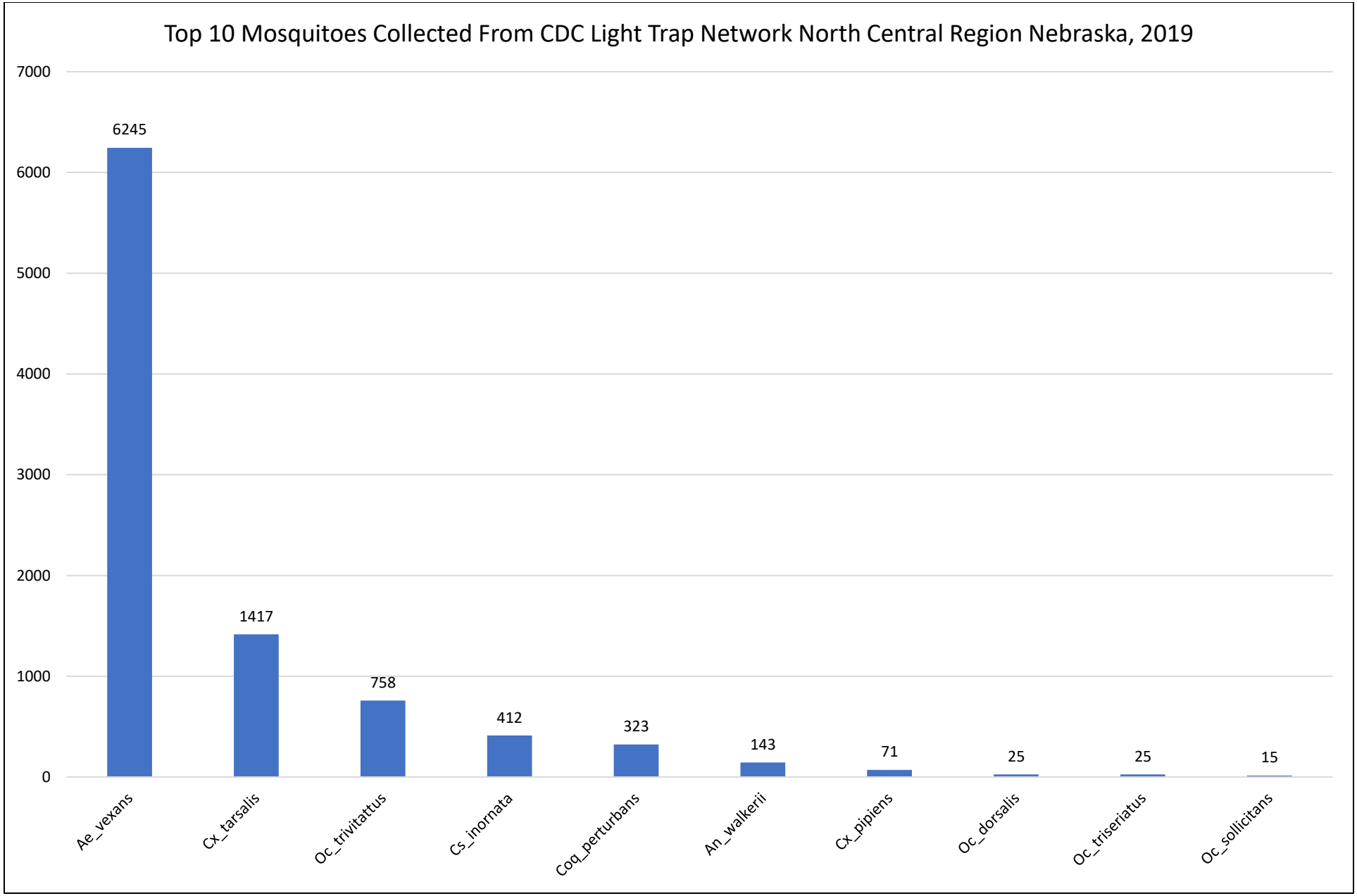


Figure 8. Top 10 mosquito species collected from CDC Light Trap Network North Central Region Nebraska, 2019. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culesita*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, Unid'd= Unidentified.

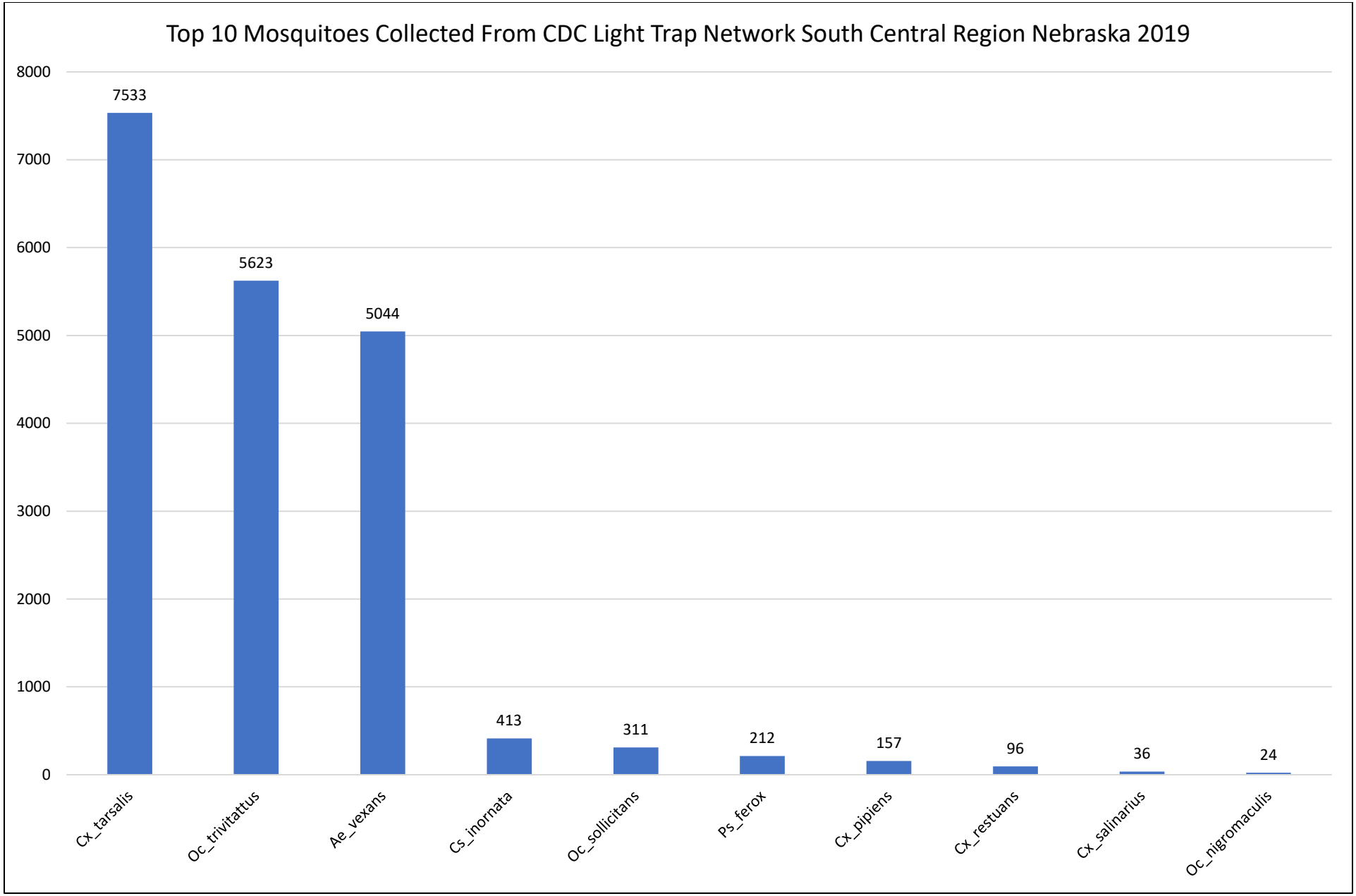


Figure 9. Top 10 mosquito species collected from CDC Light Trap Network South Central Region Nebraska, 2019. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culesita*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, Unid'd= Unidentified.

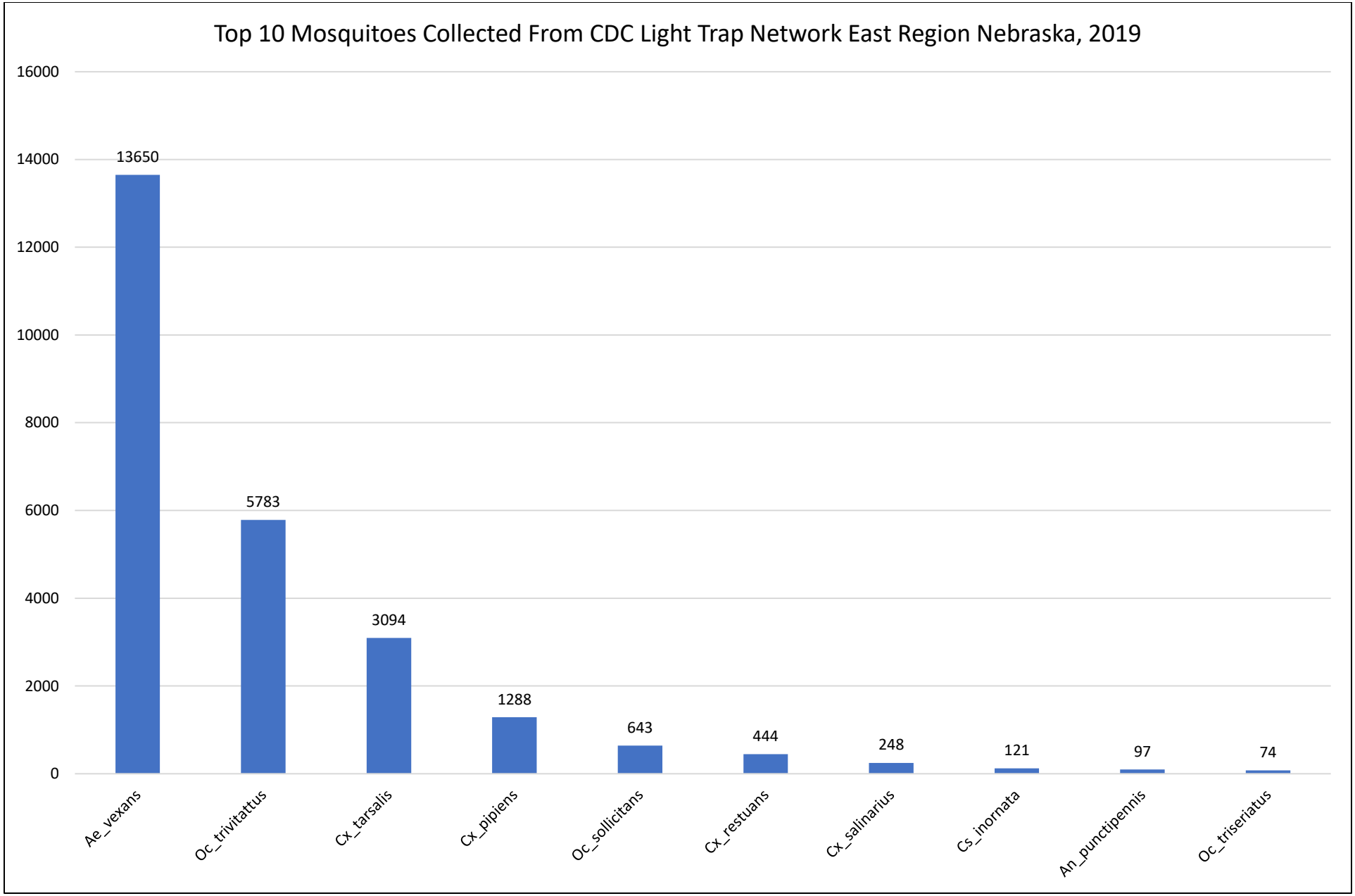


Figure 10. Top 10 mosquito species collected from CDC Light Trap Network East Region Nebraska, 2019. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culesita*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, Unid'd= Unidentified.

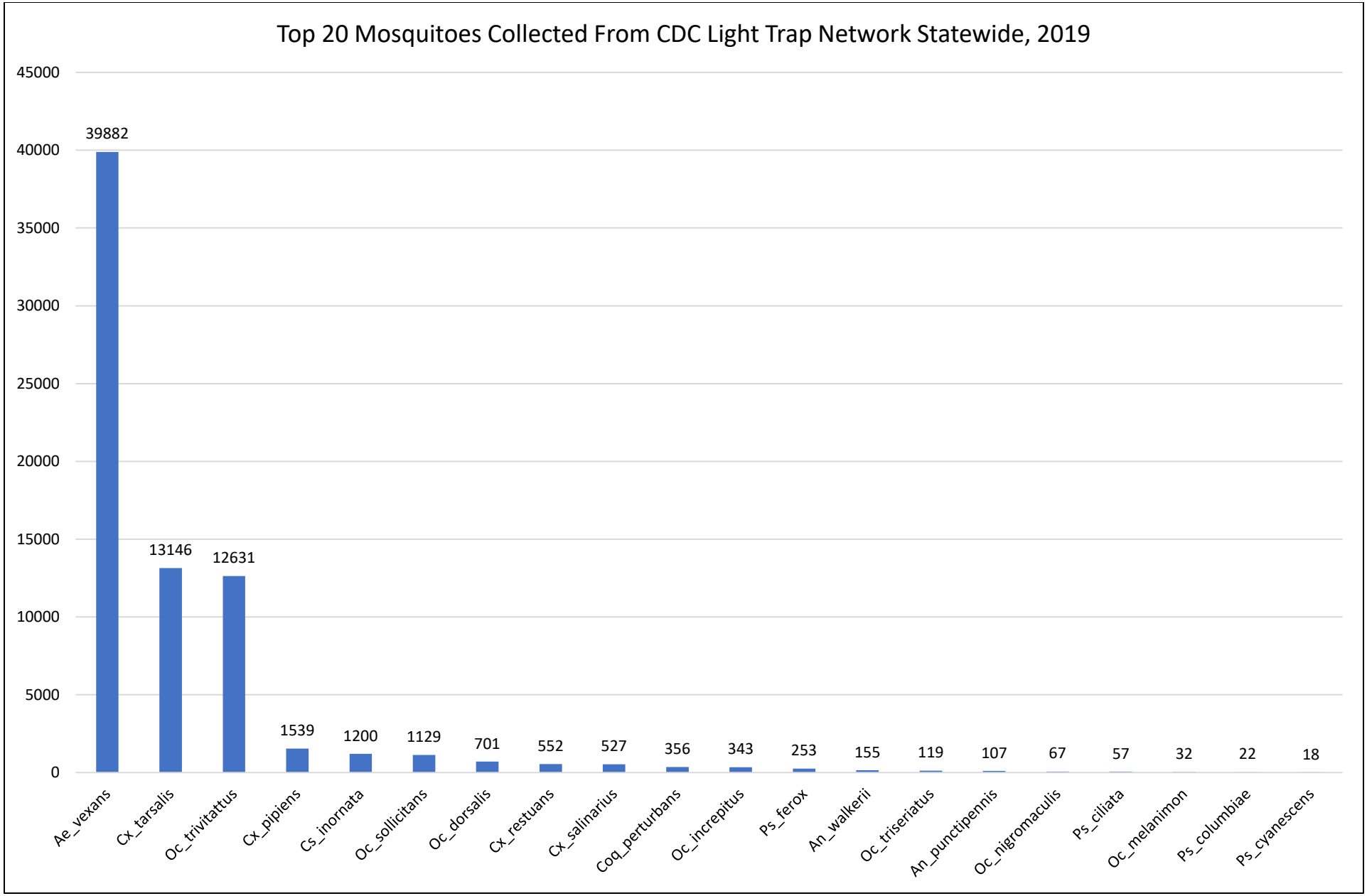


Figure 11. Top 20 mosquito species collected from CDC Light Trap Network Statewide Nebraska, 2019. Note that the first part of the mosquito species name has been abbreviated. Ae= *Aedes*, An= *Anopheles*, Cs= *Culesita*, Cx= *Culex*, Oc= *Ochlerotatus*, Ps= *Psorophora*, Unid'd= Unidentified.

Enhanced Invasive *Aedes* Mosquito Surveillance: Two invasive (non-native) mosquito species are the main targets of this surveillance. They are *Aedes aegypti* (the yellow fever mosquito) and *Aedes albopictus* (the Asian tiger mosquito). Unlike most native mosquito species, *Aedes aegypti* and *Aedes albopictus* bite primarily during the day. Both species are small black mosquitoes with white stripes on their back and on their legs. They can lay eggs in any small artificial or natural container that holds water. Only *Aedes albopictus* has been detected in Nebraska.

Aedes aegypti and *Aedes albopictus* have the potential to transmit several viruses, including dengue, chikungunya, Zika, and yellow fever. However, none of these viruses are known to be transmitted within Nebraska, but people are infected with these viruses in other parts of the world, including in Mexico, Central and South America, the Caribbean, and Asia. All collected invasive *Aedes* mosquitoes are tested for dengue, chikungunya, and Zika.

During this sampling period, four total *Aedes albopictus* were collected from Richardson County trap sites and a site in Douglas County. A cumulative total of 11 *Aedes albopictus* have been collected so far this season, from Douglas and Richardson counties.

Summary Table – Invasive *Aedes* Mosquito Surveillance Data (cumulative counts)

County	Trap Type	Total Mosquitoes	Total Ae_albopictus
Douglas	CDC Light	7756	0
	BG Sentinel 2	495	1
Douglas Co. Overall Total		**8251**	**1**
Lancaster	CDC Light	6080	0
	BG Sentinel 2	979	0
Lancaster Co. Overall Total		**7059**	**0**
Richardson	CDC Light	2425	2
	BG Sentinel 2	154	8
Richardson Co. Overall Total		**2579**	**10**
Overall Total		**17889**	**11**

ENVIRONMENTAL CONDITIONS

Environmental and climate conditions can impact mosquito-borne diseases by influencing mosquito numbers and mosquito infection prevalence. For example, drought has been identified as a primary driver of WNV epidemics. This is why rainfall, temperature, and drought conditions are monitored closely during the mosquito surveillance season.

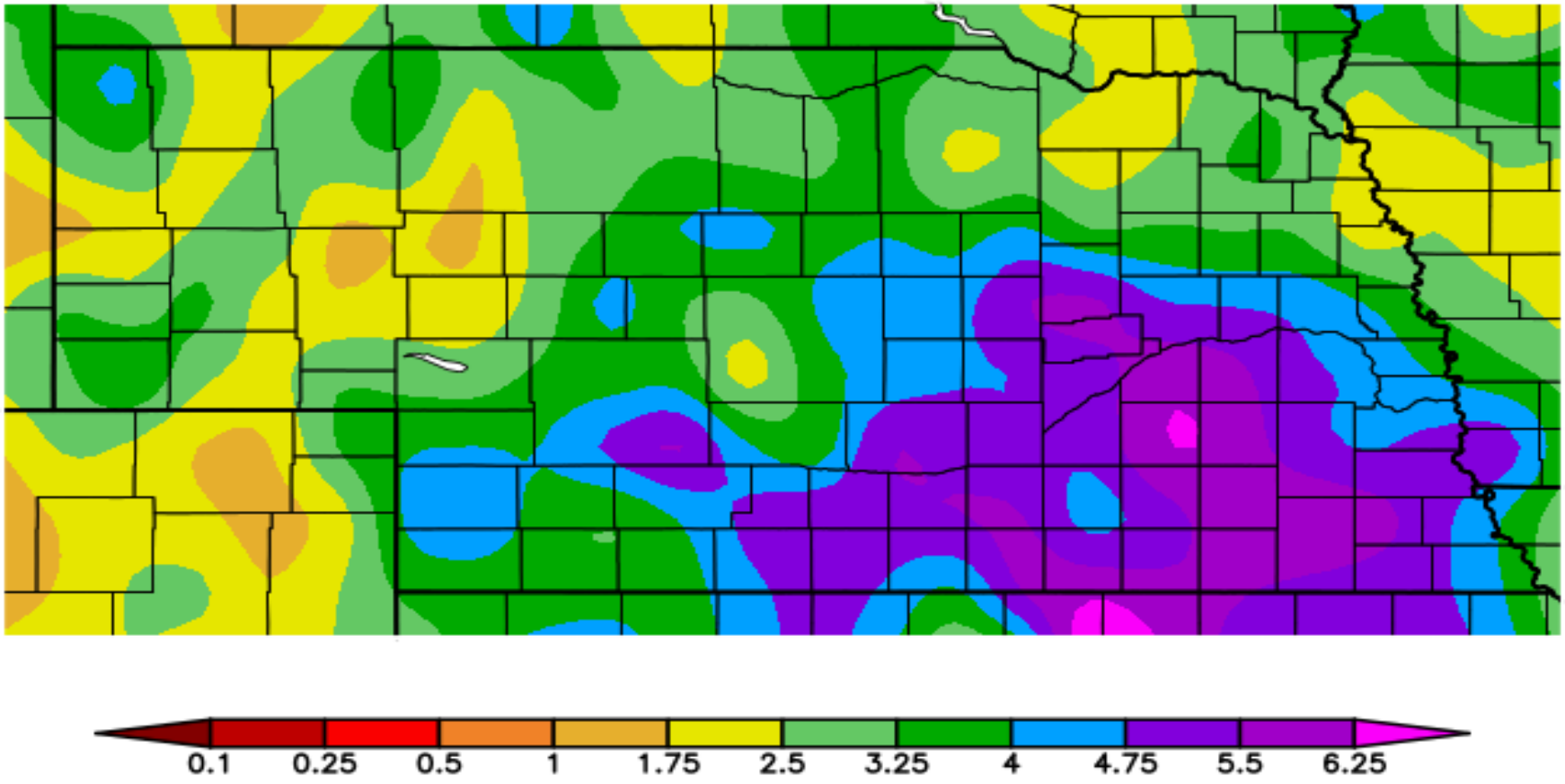
Rainfall and Temperature

Rainfall across Nebraska over the last 30 days (05/24/2019 to 06/22/2019) ranged from 1.0 to 5.5 inches (pg. 15) across the state. This was above normal over several areas of Nebraska (pg. 16) primarily located in the southern reaches of the state. Average temperatures (pg. 17) for the last 30 days were at or below normal over most areas of the state. The long range outlook (next 8 to 14 days), is predicting a higher probability in seeing below normal temps and above normal precipitation over most of the state. More climate and forecast information can be found at:

High Plains Regional Climate Center at: https://hprcc.unl.edu/index.php

National Weather Service 8 to 14 day outlooks: http://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php

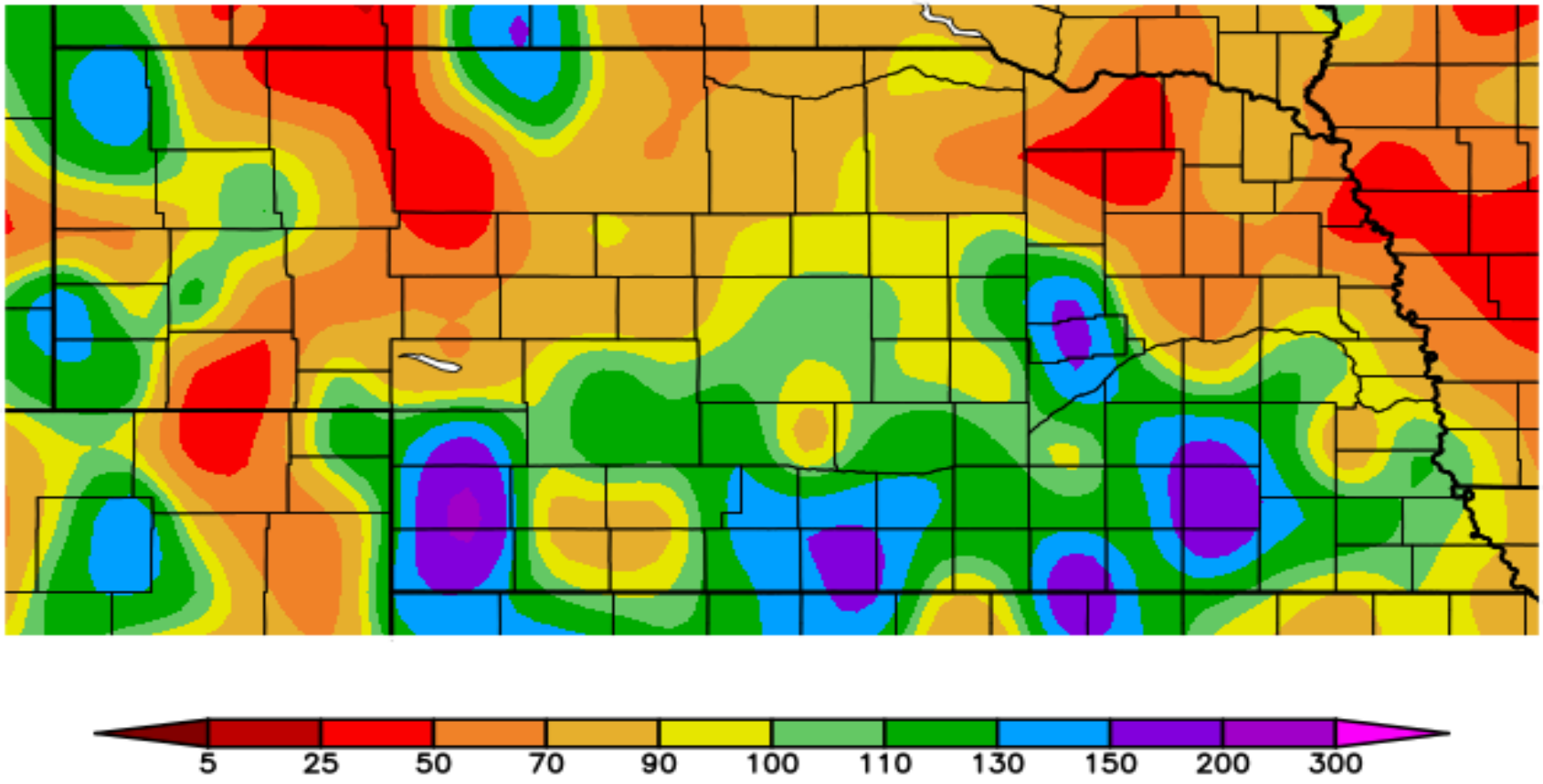
Precipitation (in)
5/31/2019 – 6/29/2019



Generated 6/30/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

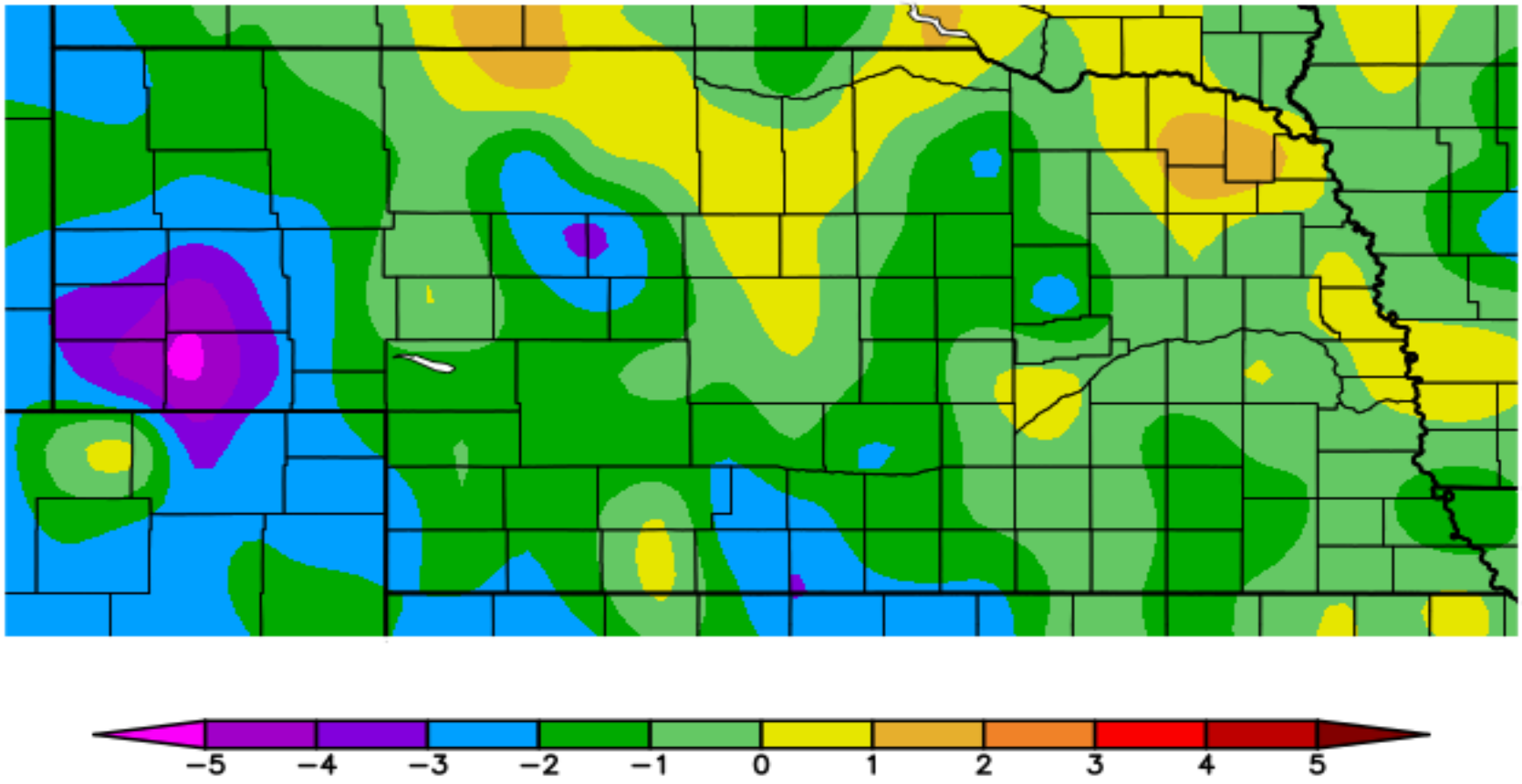
Percent of Normal Precipitation (%)
5/31/2019 – 6/29/2019



Generated 6/30/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from Normal Temperature (F)
5/31/2019 – 6/29/2019



Generated 6/30/2019 at HPRCC using provisional data.

NOAA Regional Climate Centers

Three Month Temperature and Rainfall Forecast

For June 2019 to August 2019, forecast predictions for Nebraska are for an elevated probability of below normal temperature over most of the state and elevated chances for above normal precipitation. Links for the pages containing graphics of the long-term outlook can be found here:

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1 (Temperature and Rainfall Outlook).

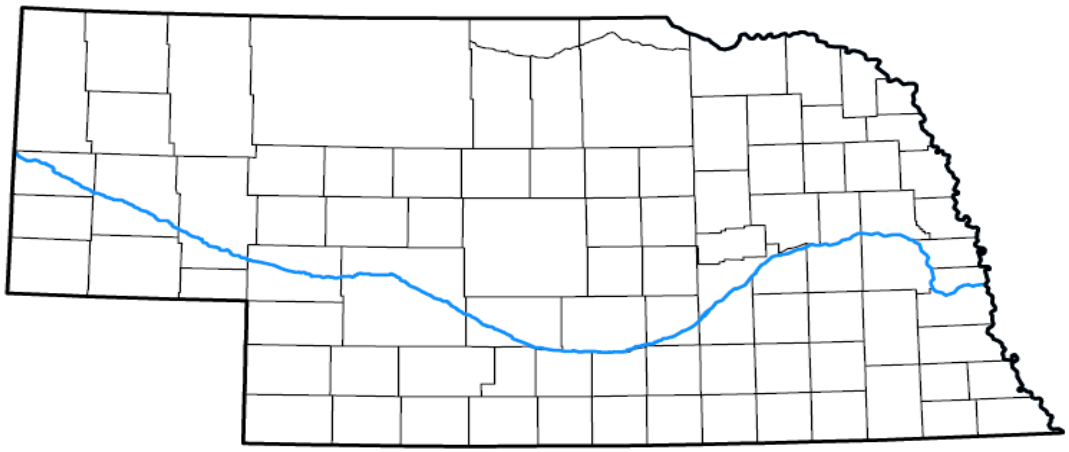
Drought Outlook

The current drought monitor on page 18 showed no abnormally dry or drought conditions in Nebraska. 100% of the state is being reported with no drought or abnormally dry conditions, a decrease compared to last week. The current monthly drought outlook for July can be found on page nine. For more information please visit the links below:

http://droughtmonitor.unl.edu/ (U.S. Drought Monitor).

http://www.cpc.ncep.noaa.gov/products/expert_assessment/mdo_summary.php (U.S. Monthly Drought Outlook).

U.S. Drought Monitor
Nebraska



June 25, 2019

(Released Thursday, Jun. 27, 2019)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	100.00	0.00	0.00	0.00	0.00	0.00
Last Week *06-18-2019*	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago *03-26-2019*	100.00	0.00	0.00	0.00	0.00	0.00
Start of Calendar Year *01-01-2019*	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year *09-25-2018*	99.83	0.17	0.00	0.00	0.00	0.00
One Year Ago *06-26-2018*	92.75	7.25	0.84	0.00	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

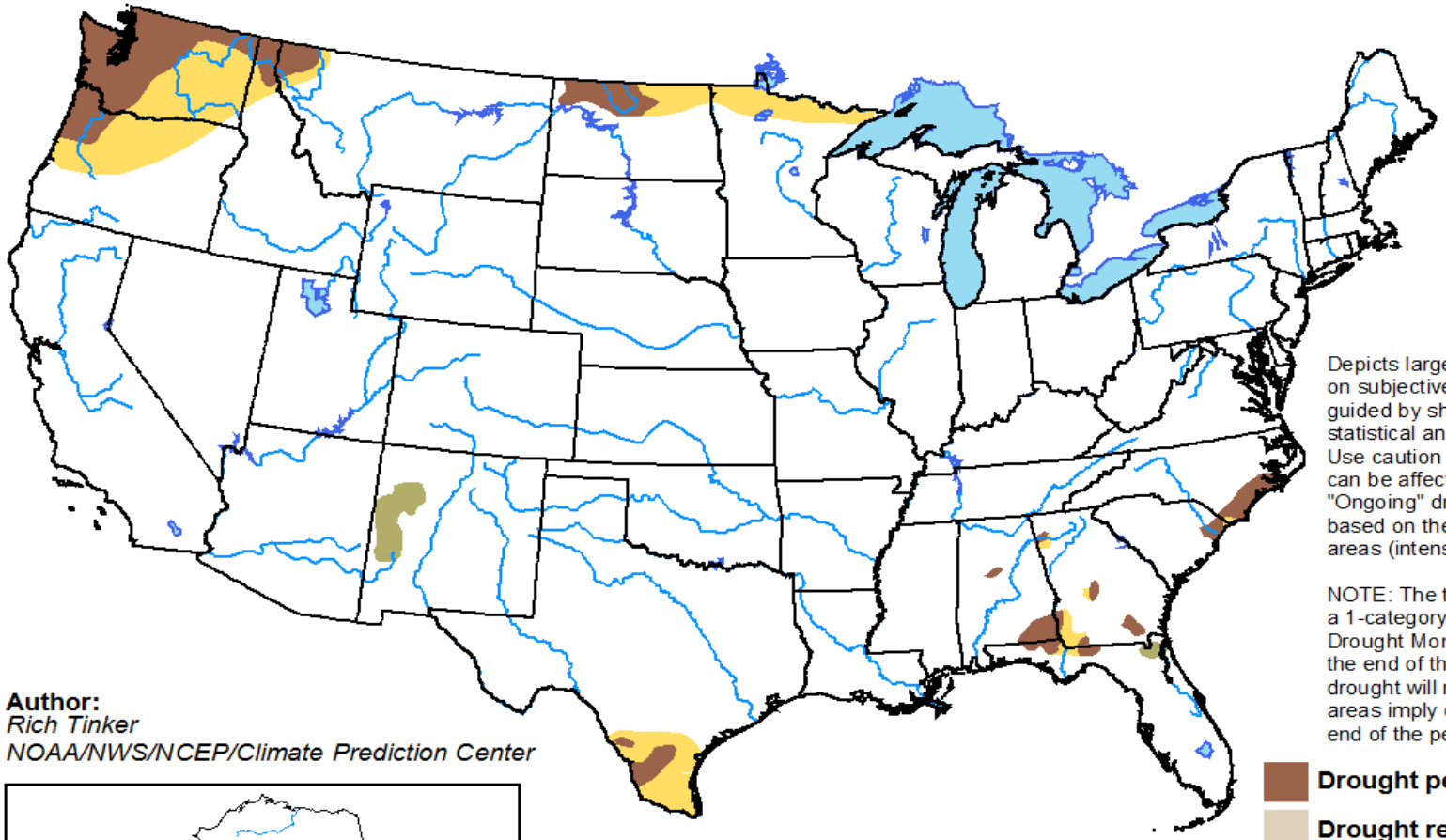
Author:
Brad Pugh
CPC/NOAA

droughtmonitor.unl.edu

U.S. Monthly Drought Outlook

Drought Tendency During the Valid Period

Valid for July 2019
Released June 30, 2019

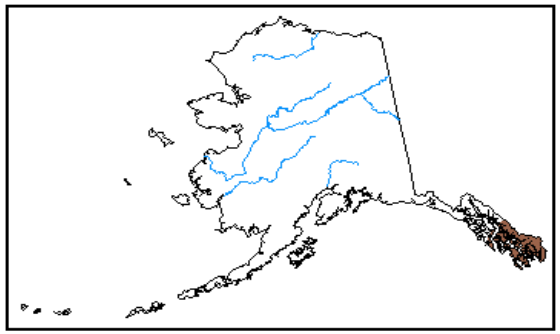


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Drought persists
Drought remains but improves
Drought removal likely
Drought development likely

Author:
Rich Tinker
NOAA/NWS/NCEP/Climate Prediction Center



http://go.usa.gov/3eZGd

For more information on mosquito-borne diseases and prevention information please visit the following websites:

http://dhhs.ne.gov/wnv (Nebraska Department of Health and Human Services WNV Surveillance Program web site).

http://dhhs.ne.gov/Pages/West-Nile-Virus-Education.aspx (Nebraska Department of Health and Human Services Mosquito-Borne Disease web site and links to downloadable educational pamphlets).

https://www.cdc.gov/features/stopmosquitoes/index.html (CDC Avoid Mosquito Bites web site).

Fight the Bite!!